Amendments to the Specification:

Please replace paragraph [0008] with the following amended paragraph. The amended portion is underlined for clarity.

[0008] FIG. 1 illustrates a quilting frame 1 and its components used for reference in this patent. The frame 1 is described in detail in U.S. Pat. No. 6,615,756. The components of frame 1 of interest in this invention are the longitudinal carriage 2 and the transverse carriage 3 with reference to the coordinate system 29. The sewing machine 4 is placed on top of the base plate 5 which is placed on the transverse carriage 3 which is placed on top of the longitudinal carriage 2 which rides on rails 6. The transverse carriage 3 has guide wheels suitably fixed such that only movement in the transverse direction is possible. Similarly, the longitudinal carriage 2 has guide wheels suitably fixed such that only longitudinal movement is possible. The sewing machine 4 can move in both transverse and longitudinal directions using this arrangement. FIG. 2 illustrates the mounting of the ~~position~~ speed sensor 7 to the sensor arm 8 in one embodiment. The sensor 7 is pivotally mounted to the sensor arm 8 such that the sensor is free to rotate an axis parallel to the longitudinal axis. The sensor 7 rests on the table top 13 or other suitable flat surface. The sensor arm 8 is pivotally mounted to the base plate 5 in journals 9 such that the sensor arm 8 is free to rotate in an axis parallel to the longitudinal axis, but is restrained in all other axes. The sensor arm 8 is restrained from sliding in the journals 9 by a preloaded spring 10 and clip 11. Therefore, as the carriage assembly comprised of 2 and 3 is moved in the longitudinal and transverse directions, the sensor 7 moves in the same directions and at the same speed. Also shown is another embodiment where speed sensors are shaft encoders 12 attached to the carriage wheels or alternately independent units suitable attached to the longitudinal and transverse carriages 2 and 3 respectively. The electrical output of the sensor is sent to the electronic control via the sensor wire bundle 14. Two signals are present in the sensor wire bundle 14. The first signal is ~~a~~ an alternating voltage with constant amplitude, but frequency varying with longitudinal speed 15 as shown in FIG. 3. The second signal is ~~a~~ an alternating voltage with constant amplitude, but frequency varying with transverse speed 16. The varying frequency for both the longitudinal 15 and the transverse 16 directions are generated by means of two slotted disks, attached to rotatably journaled shafts

respectively. The shafts are mounted in a base housing in an orthogonal manner. A trackball, as used in a conventional computer mouse peripheral, causes the shafts to rotate by means of tangential contact with the shafts and the table top which the sensor 7 rides on. The resulting rotation of the shafts is proportional to the longitudinal and transverse speeds of the carriages 2,3 respectively. The slotted disks therefore rotate with the same rotational speed as their respective shafts. The slots in the disks alternately break and un-break a light beam that is incident on a phototransistor. The resulting voltage output of the phototransistor cycles between two electrical potentials, one for light "off", typically zero volts and one for light "on", typically five volts, at a rate dependent on the speed of the carriages, 15,16. The resulting signal is therefore one of constant amplitude and varying frequency based on carriage speed. In another embodiment of the invention, the slotted disks and sensor 7, spring 10, sensor arm 8, clip 11 described above are replaced by shaft encoders 12 such as those manufactured by U.S. Digital. Shaft encoders and their operation are well known to those knowledgeable in the art. In summary, shaft encoders may use a slotted disk or a patterned reflective disk to break and un-break a light beam incident upon a phototransistor or other type of light sensor at a rate proportional to the shaft rotational speed. The resulting output voltage from the shaft encoder will then vary as shown in 15,16. As shown in FIG 3, the signals 15 and 16 are then converted to independent voltages 17 and 18 proportional to their frequencies 15 and 16 respectively. An estimate of the true speed of the carriage comprised of 2 and 3 is obtained by adding voltages 17 and 18 together to form a composite sum voltage 19. The composite voltage 19 is then proportional to carriage speed. The composite voltage 19 is then monitored by a comparator circuit 20 which takes as its input the composite voltage 19, compares it to established lower 21 and higher 22 bounds, and provides as its output twenty levels of on-off switches on gates. More clearly, as the voltage 19 is increased slightly above the lower bound 21 the first gate or switch allows current to pass through its comparator stage 23. As the voltage 19 is raised higher, the second gate or switch allows current to pass through its comparator stage 24. This continues in a similar fashion until the voltage 19 reaches just above the higher bound 22of the comparator circuit, then the final stage, the twentieth stage 25, of the comparator circuit is energized allowing current to pass through the final stage 25. As shown in the block diagram of FIG. 3 and more distinctly in FIG 4, the gates in the comparator stages control current through one half of an opto-isolator

integrated circuit 26. The function of the opto-isolator circuit 26 embodied in this invention is to electrically separate the voltages and currents of the control circuitry from the voltages and currents of the sewing machine. As the gates 30 of the comparator circuit 20 cycle on and off in accordance with the speed of the sensor 7, they allow current to pass through light emitting diodes 31, LEDs, embedded within the opto-isolator 26 integrated circuit causing the LED to illuminate. The other half of the opto-isolator circuit 26 is a series of phototransistors 32 which pass electrical current when illuminated by the light of its matching LED. This is integrated with the electronics of the sewing machine as shown in FIG 5. The majority of sewing machines have a foot pedal speed control which is at its core a variable resistor 27. The purpose of this invention is to mimic the variable resistance in a manner such that it varies with the translational speed of the sensor 7 so that the resulting stitch length remains constant. The output of the opto-isolator circuit 26 in conjunction with a plurality of fixed resistors 27 accomplish the task of mimicking the variable resistance. As shown in FIG 5, when the first comparator stage 23 allows current to flow through its gate, illuminating the first stage LED of the opto-isolator, the matching photo-transistor is energized allowing current to flow. The first resistor 28 in the plurality of resistors 27 is thusly electrically connected to the sewing machine. The sewing machine will run at a speed commensurate with the electrical resistance applied to the foot pedal connector. Similarly, as the sensor 7 speed changes in direct response to the change in translational speed of the sewing machine 4, different stages of the comparator circuit 20 will be energized. As a result, different stages of the opto-isolator circuit 26 will be energized causing different phototransistors to be energized which, in turn, cause different resistance values to be applied to the foot pedal connector port of the sewing machine 4. With proper circuit tuning by judicious choice of resistors 27, the rotational speed of the sewing machine can be controlled such that the stitch length is constant, independent of the translational speed, until the point where the translational speed causes the machine to run at its maximum rotational speed. Above that speed , the machine cannot physically rotate any faster and stitch length will elongate.